F. A. BROWNE.

MOVABLE MIXING APPARATUS.

APPLICATION FILED APR. 12, 1917.

1,363,560.

Patented Dec. 28, 1920.

4 SHEETS—SHEET 1.

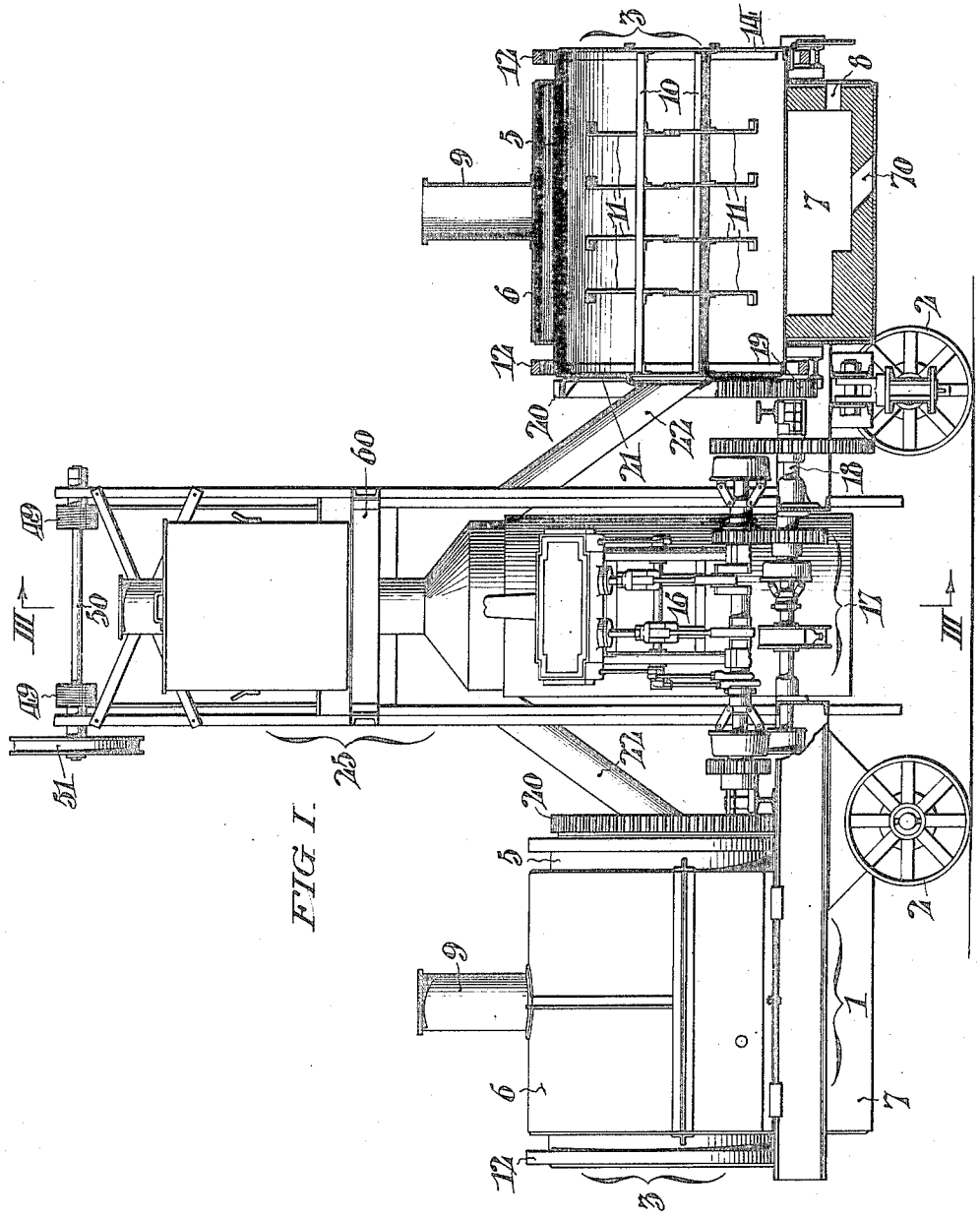


FIG. I.

Witnesses

John C. Bergner.

James H. Bell

Inventor

Frank A. Browne,

by Fulley & Fay.

Attorneys.

F. A. BROWNE.

MOVABLE MIXING APPARATUS.

APPLICATION FILED APR. 12, 1917.

1,363,560. Patented Dec. 28, 1920.

4 SHEETS—SHEET 2.

FIG. III.

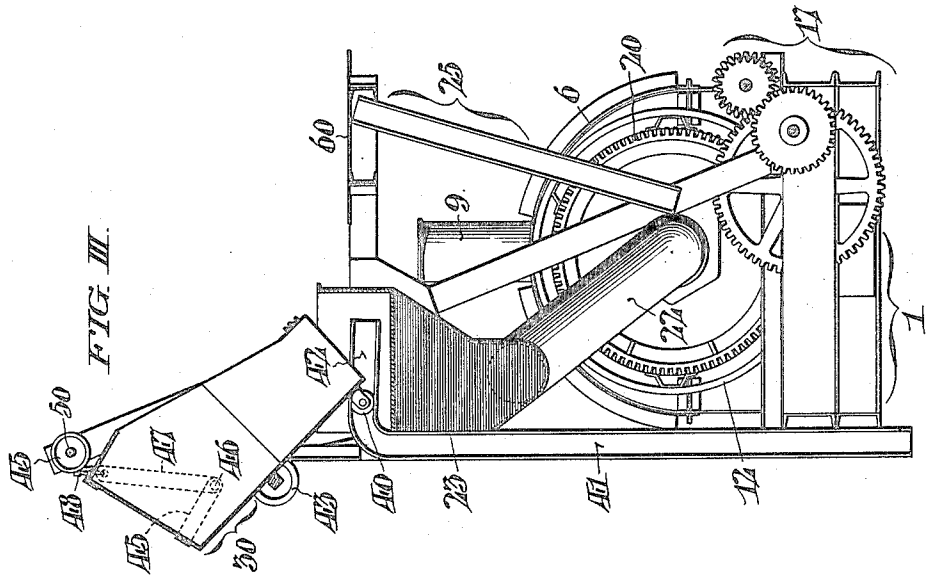
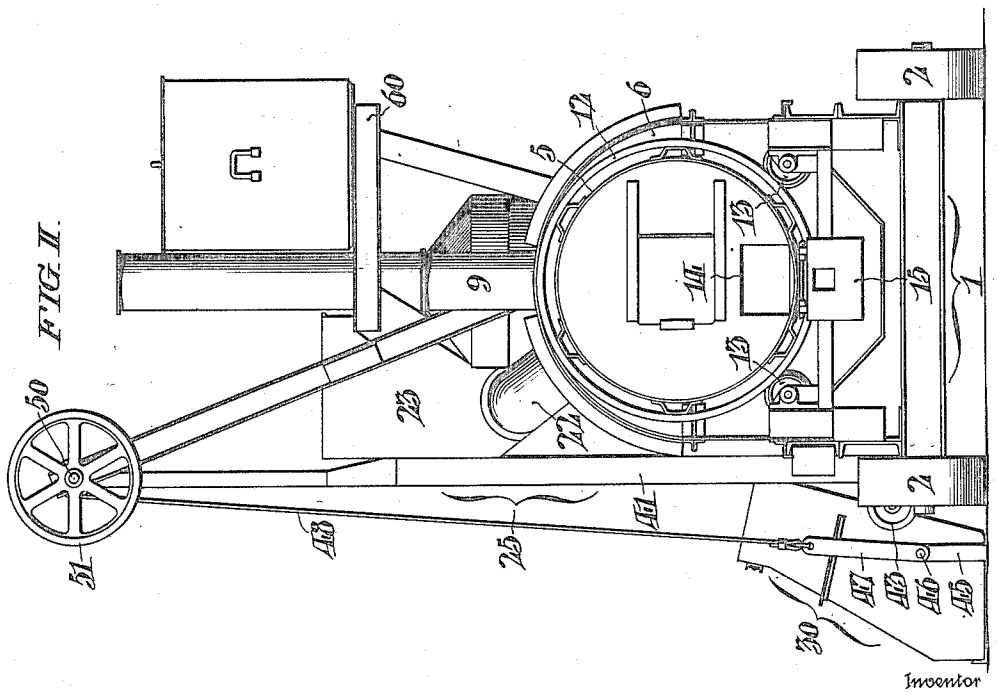


FIG. II.



Witnesses
John C. Bergner.
James B. Bell.

Inventor
Frank A. Browne,
by Fuller & Fong
Attorneys.

F. A. BROWNE.

MOVABLE MIXING APPARATUS.

APPLICATION FILED APR. 12, 1917.

1,363,560. Patented Dec. 28, 1920.

4 SHEETS—SHEET 3.

FIG. IV.

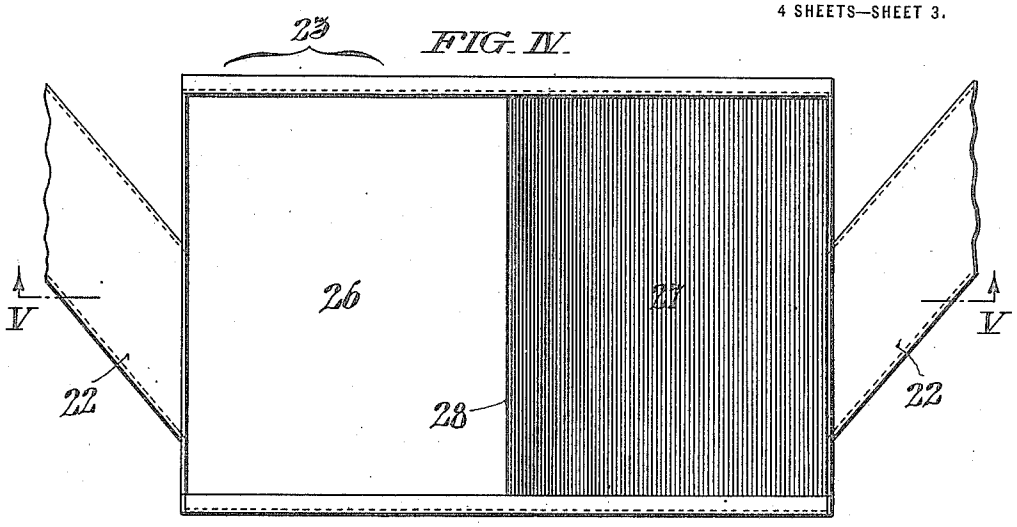
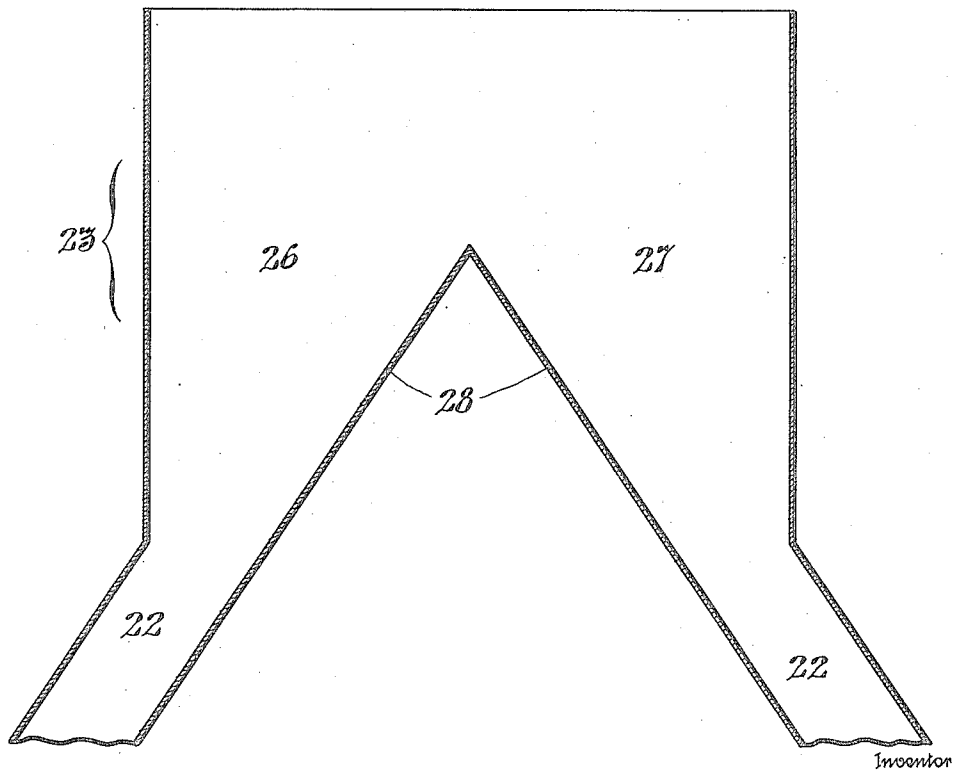



FIG. V.




Inventor

Frank A. Browne,

by Fuller & Paul

Attorneys.

Witnesses

John C. Bergner.

James H. Bell

F. A. BROWNE.

MOVABLE MIXING APPARATUS.

APPLICATION FILED APR. 12, 1917.

1,363,560.

Patented Dec. 28, 1920.

4 SHEETS—SHEET 4.

FIG. VII.

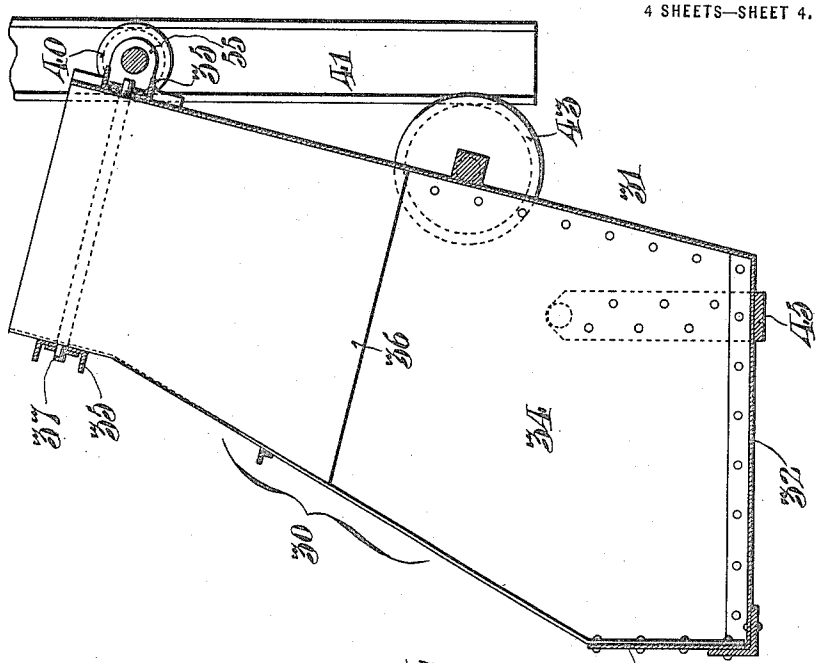
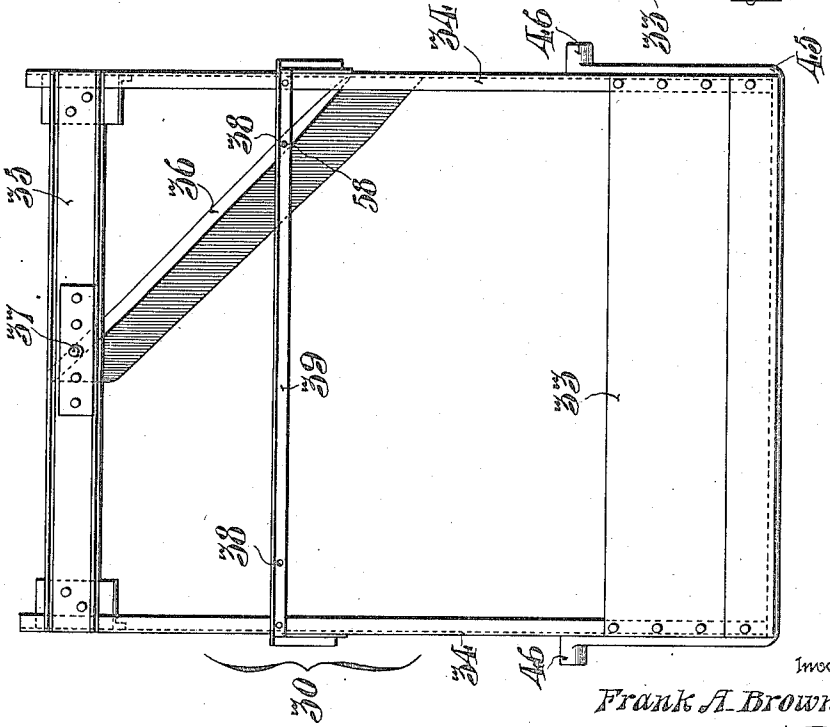



FIG. VI.




Witnesses

John C. Berguer.

James H. Bell.

Inventor

Frank A. Browne,

by Fuller & Fay

Attorneys.

# UNITED STATES PATENT OFFICE.

FRANK A. BROWNE, OF BUFFALO, NEW YORK, ASSIGNOR TO THE BARBER ASPHALT PAVING COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF WEST VIRGINIA.

## MOVABLE MIXING APPARATUS.

1,363,560. Specification of Letters Patent. Patented Dec. 28, 1920.

Application filed April 12, 1917. Serial No. 161,537.

*To all whom it may concern:*

Be it known that I, FRANK A. BROWNE, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Movable Mixing Apparatus, whereof the following is a specification, reference being had to the accompanying drawings.

The invention relates to a portable mixing apparatus or plant, adapted for use in connection with bituminous mastics, such as are used for pavements, paving blocks and the like. In an apparatus of this sort the material to be operated upon is mixed in a mixing drum, in which it is agitated and heated at the same time.

An object of my invention is to provide a portable mixing apparatus in which are employed a plurality of such mixing drums, all of them driven from the same source of power. A further object is to provide means for selectively operating any or all of said drums.

A still further object is to provide a single means for feeding the material to said drums, and to provide selective means for feeding any desired drum.

With these and other objects in view I provide a plurality of cylindrical drums which are rotatably mounted on a suitable framework and grouped about a central source of power. I also provide a central feed hopper having a plurality of chutes, one coöperating with each drum. The material is delivered to the feed hopper by means of a skip bucket which coöperates with the hopper in directing the material into the desired chute.

Referring to the accompanying drawings, Figure I, is a side elevation of a portable mixing plant conveniently embodying my invention.

Fig. II, is an end elevation of the same as seen from the left of Fig. I.

Fig. III, is a central transverse sectional view through the apparatus, the plane of the section being indicated by the arrows III—III in Fig. II.

Fig. IV, is a plan view of the feed hopper.

Fig. V, is a sectional view of the same along the line V, V, of Fig. IV.

Figs. VI, and VII, are detail views of the skip bucket operatively associated with the feed hopper.

In the embodiment of the invention shown in the drawings, rotary drums 3, are suitably mounted on frame 1, which is provided with wheels 2, which render the whole readily portable or mobile. Drums 3, are cylindrical in form, and are horizontally mounted for rotation on wheels 13, which engage rings 12 mounted on each end of drums 3. Drums 3, are each surrounded by an enveloping furnace 6, which is provided with a fire box 7, and a flue 9. Fire box 7, is provided with a suitable opening 8, for the reception of an oil burner, or similar heating device. Air is admitted to fire box 7, through opening 70, which provides a proper draft so that the heated products of combustion completely encircle drum 3, and pass out through flue 9. Thus the drums or mixing units 3 are independently heated, so that they can be operated concurrently or singly with maximum convenience and economy.

Drums 3, are identical in construction, and have mounted within them a plurality of longitudinal bars 10. Coöperating with bars 10, is a plurality of cross bars 11, which are mounted in pairs as shown, and which when the drum is rotated, assist in thoroughly mixing the ingredients.

The power for rotating drums 3, is provided by any suitable means such as a prime mover here shown as having the form of an engine 16, which is centrally mounted on frame 1, between drums 3. The driving mechanism is comprehensively indicated at 17, and transmits power to a shaft 18, which is provided at each end with a gear pinion 19, which intermeshes with gears 20 on the ends of drums 3. Any suitable form of driving mechanism may be employed in this connection. It is, however, desirable to provide such clutch mechanism as may enable either or both of drums 3, to be rotated at one time.

The material to be mixed in drums 3, is admitted thereto through chutes 22, which communicate with elevated feed hopper 23. This hopper is located centrally of and above drums 3, on superstructure 25, which supports it directly over engine 16 and also comprises a skip-bucket hoist for filling it located at one side of frame 1 between the mixing drums or units 3, 3. The lower walls of chutes 22, unite in the middle of hopper 23, to form a point 28, which practically divides the hopper into two portions or

sections 26, and 27. This is best shown in Figs. IV, and V, from which it is obvious that any material placed in portion 26, of hopper 23, is fed and delivered through its chute to one of drum 3, while material placed in the other portion of the hopper 27, is fed and delivered through the other chute to the other drum 3.

The material to be mixed is elevated and delivered to hopper 23, by means of a skip bucket 30, which is shown in detail in Figs. VI, and VII and forms part of the skip-bucket hoist above mentioned. This bucket comprises a back wall 31, a bottom 32, and side walls 34, together with a low front wall 33; these walls are riveted together in the form shown. The skip-bucket 30 is thus open-sided in front for reception of material to be mixed (from a wagon or the like) when the bucket is resting on its bottom at the foot of the hoist, at the ground beside the frame 1. Across the top of the bucket both front and back are double angle irons 35. These angle irons support a pin 37, upon which is pivotally mounted a plate 36. Plate 36 is adapted to swing on its pivot 37 in the mouth of the bucket 30 until it contacts with either of the side walls 34. In order that plate 36, may be held against either of the side walls 34, I provide bridging strip 39, extending across the front of bucket 30, in which are located two holes 38. A suitable engaging pin 58, may be inserted through either of these holes, to engage plate 36, and hold it in the position shown in Fig. VI, or similarly inclined against the opposite side. Bucket 30, is emptied from the top in a manner hereinafter described, and by shifting and securing plate 36, to the proper side, the contents may be selectively diverted and directed to either hopper section and to either mixing unit, as desired.

The angle iron 35, mounted on back plate 31, carries a pair of lugs 55, in which are journaled rollers 40. Rollers 40, are adapted to be engaged on both sides by tracks 41. These tracks 41, extend vertically from a point near the ground along superstructure 25, and terminate in short horizontal projections 42, at the level of hopper 23. Bucket 30, is also provided with follower wheels 43, which engage the outside of bucket 41, while it occupies the position shown in Figs. II. and VII. The supporting means for bucket 30, comprise U shaped straps 45, mounted on the bottom thereof, which terminate in trunnions 46. Trunnions 46, are pivotally attached to links 47, which are in turn attached to cable 48 which is functional both in supporting and raising bucket 30. As will be noted in the drawings, strap 45, is located well to the rear of bucket 30, so that the action of gravity tends to hold it in the upright position as long as wheels 40, engage the vertical portions of track 41. When, however, bucket 30, is raised by cable 48, to the position above the hopper 23 shown in Fig. III, in which wheels 40, engage the horizontal portion of track 41, the bucket 30, is automatically turned and inverted, low side uppermost and the contents are delivered to and deposited in hopper 23. The contents are then fed by chute 22, into one of drums 3, as determined by the way deflecting plate 36, is inclined. The raising operation is accomplished by winding cables 48, about winding drums 49. Drums 49, are formed upon shaft 50, journaled in the top of superstructure 25, and rotated by pulley 51, which may be actuated from any appropriate source.

In operation drums 3, are started rotating and material placed in bucket 30. Deflector plate 36, is fastened either at one side of the bucket or the other, opposite the drum desired to be fed. When bucket 30, is raised, turned, and inverted, the material is deflected and directed by plate 30, into either section 26, or 27, of hopper 23, and thence into the appropriate drum 3. After the material has been mixed for a sufficient length of time it may be removed or discharged from drum 3 at the corresponding end of mobile frame 1 through outlet opening 14, which is provided with a suitable hinged door 11.

Having thus described my invention, I claim:

1. In a portable mixing plant, the combination with a mobile frame, rotary mixing units mounted and discharging at opposite ends thereof, and a feed hopper between and above said mixing units with supply connections to each of them; of a prime mover on said frame beneath said feed hopper and between said mixing drums with driving connections to each of them; and a superstructure on said frame supporting said hopper and comprising a skip-bucket hoist between said drums, at one side of said frame, for elevating material to be mixed received by the bucket at the ground beside said frame and delivering said material to said feed-hopper.

2. In a portable mixing plant, the combination with a mobile frame, mixing apparatus thereon, and an elevated feed hopper delivering to said mixing apparatus; of a superstructure on said frame supporting said feed hopper and comprising a skip-bucket hoist at one side of said frame, with a skip-bucket adapted to rest on its bottom and receive material to be mixed at the ground beside said frame, and means for automatically turning said bucket to deliver its contents to said feed-hopper when elevated above the same.

3. In a portable mixing plant, the combination with a mobile frame, mixing ap-

paratus thereon comprising a plurality of mixing units, and an elevated feed-hopper delivering from one side to one mixing unit and from the other side to another mixing unit; of a superstructure on said frame supporting said feed hopper and comprising a skip-bucket hoist at one side of said frame with an open-sided skip-bucket adapted to rest on its bottom at the ground beside the frame and receive material to be mixed through its lateral opening, means for automatically turning said bucket to deliver its contents to said feed-hopper when elevated above the same, and means for selectively directing the contents of said bucket so delivered to one side or the other of said hopper and thus to one or the other of said mixing units.

4. In a mixing plant, the combination with mixing apparatus comprising a plurality of mixing units and an elevated feed hopper divided into a plurality of sections each delivering to one of said mixing units; of a skip-bucket hoist at one side of said feed hopper with a bucket adapted to rest on its bottom at the foot of the hoist to receive material to be mixed; means for automatically turning said bucket to deliver its contents to said feed hopper when elevated above the same; and means associated with said bucket for selectively directing its contents to the desired section of said hopper.

5. In a mixing plant, the combination with mixing apparatus comprising a plurality of units and an elevated feed hopper divided into a plurality of sections each delivering to one of said units; of a skip-bucket hoist at one side of said feed hopper with an open-sided skip-bucket adapted to rest on its bottom at the foot of the hoist to receive material to be mixed at its open side; means for automatically turning said bucket open side uppermost and inverting it to deliver its contents to said feed hopper when elevated above the same; and a deflecting plate with one end pivoted in the mouth of said bucket and the other end shiftable from side to side thereof to determine the delivery of the bucket contents to one section or another of said hopper and thus to one or another of the units fed from the hopper.

6. In a portable mixing plant, the combination with a mobile frame, rotary mixing units mounted and discharging at opposite ends thereof, and a feed-hopper between and above said mixing units delivering from one side to one mixing unit and from the other side to the other mixing unit; of means for independently heating the respective units; a prime mover on said frame beneath said feed-hopper and between said mixing drums with driving connections for driving either of them; and a superstructure on said frame supporting said hopper and comprising a skip-bucket hoist between said drums, at one side of said frame, including means for elevating material to be mixed received by the bucket at the ground beside said frame and directing and delivering said material selectively to one side or the other of said hopper and thus to one or the other of said mixing units.

In testimony whereof, I have hereunto signed my name, at Buffalo, Erie Co., N. Y. this 7th day of April 1917.

FRANK A. BROWNE.

Witnesses:
JOHN J. GIFFORD,
JOHN RINDFLEISCH.